

WHAT IS CLAIMED IS:

1. A method of forming an image, comprising:
providing a matrix of orderly tiled patterns;
offsetting each pattern such that a first pattern is offset from a second

5 pattern; and

consecutively filling the orderly tiled patterns in the order of the pattern to
create a desired shade.

2. The method of claim 1, wherein the matrix is a dither matrix structured by
10 orderly tiling a plurality of dither patterns.

3. The method of claim 1, wherein the patterns are arranged such that a shade
level area at the end, with respect to a scanning direction, of at least one row of the first
pattern is adjacent to a next higher shade level area of the second pattern.

4. The method of claim 1, wherein the patterns are arranged such that at least a
shade level at the end of a row of the first pattern, that is referred to first for scanning, is
adjacent to a next higher shade level of the second pattern.

5. The method of claim 1, wherein shade level areas in each pattern in the
matrix are arranged sequentially in a scanning direction corresponding with the shade levels.

6. The method of claim 1, wherein the patterns are identical in the
arrangement of shade level areas with the first pattern shifted from the second pattern.

7. The method of claim 1, wherein shade level areas in each row in each
pattern are aligned sequentially in the scanning direction corresponding with the
shade levels.

8. The method of claim 1, wherein the patterns are arranged so that a shade
level area at the head of a row that is referred to first for scanning is adjacent, in a direction

perpendicular to the scanning direction, to a shade level area at the head of a row that is referred to next.

9. The method of claim 1, wherein the pattern includes a rectangular portion
5 made up of rectangularly arranged shade level areas, and at least one portion extending from the rectangular portion and made up of at least one shade level area.

10. The method of claim 1, wherein the shading applies to both monochrome
and color images and to the density of both monochrome and color images.

10 11. A apparatus for forming an image, comprising:
an image forming device wherein the image forming device produces a
matrix of orderly tiled patterns, which are consecutively filed in the order of the pattern to
create a desired shade, with each pattern offset such that a first pattern is offset from a second
15 pattern.

12. The apparatus of claim 11, wherein the matrix is a dither matrix structured
by orderly tiling a plurality of dither patterns.

20 13. The apparatus of claim 11, wherein the patterns are arranged such that a
shade level area at the end, with respect to a scanning direction, of at least one row of the first
pattern is adjacent to a next higher shade level area of the second pattern.

25 14. The apparatus of claim 11, wherein the patterns are arranged such that at
least a shade level at the end of a row of the first pattern, that is referred to first for scanning,
is adjacent to a next higher shade level of the second pattern.

15. The apparatus of claim 11, wherein shade level areas in each pattern in the
matrix are arranged sequentially in a scanning direction corresponding with the shade levels.

30 16. The apparatus of claim 11, wherein the patterns are identical in the
arrangement of shade level areas with the first pattern shifted from the second pattern.

17. The apparatus of claim 11, wherein shade level areas in each row in each pattern are aligned sequentially in the scanning direction corresponding with the shade levels.

18. The apparatus of claim 11, wherein the patterns are arranged so that a shade level area at the head of a row that is referred to first for scanning is adjacent, in a direction perpendicular to the scanning direction, to a shade level area at the head of a row that is referred to next.

19. The apparatus of claim 11, wherein the pattern includes a rectangular portion made up of rectangularly arranged shade level areas, and at least one portion extending from the rectangular portion and made up of at least one shade level area.

20. The apparatus of claim 11, wherein the shading applies to both monochrome and color images and to the density of both monochrome and color images.

21. A program for forming a dither pattern for use by a printing device, the program comprising:

- a routine for establishing a number of gradations of print;
- a routine for establishing a tile block having a number of areas equal to the number of gradations, the tile block having at least a center square block;
- a routine for numbering the areas of the tile block; and
- a routine for offsetting adjacent tile blocks such that an area of at least one row of a first tile block and an area of a row of a second offset tile block are numbered sequentially.

22. The program according to claim 21, wherein the center square block has nine areas in a three by three matrix and the tile block is further formed with at least one additions area extending from a top or bottom row of the matrix.

23. The program according to claim 21, wherein the center square block has nine areas in a three by three matrix and the tile block is further formed with an area at each end of a center row and a center column of the matrix.

24. The program according to claim 21, wherein the center square block is a single area and the tile block is formed as a cross with an area extending from each side of the single area.

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